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Velocity model of the crust and upper mantle at the southern margin of the East European Craton (Azov Sea-Crimea-Black Sea area), DOBRE-2 & DOBRE'99 transect

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The southern part of the eastern European continental landmass consists mainly of a thick platform of Vendian and younger sediments overlying Precambrian basement, part of the East European Craton (EEC). The Scythian Platform (SP) lies between the EEC and the (mainly Alpine) deformed belt running from Dobrudja (Romania) to Crimea (Ukraine) and the Greater Caucasus (Russia), along the northern margin of the Black Sea. Hard constraints on the Palaeozoic history on the SP are very sparse and little is known of its crustal structure in this area. The poster presents the seismic results of a multidisciplinary project that fills some of this gap. The project is called DOBRE-2 (as it forms a prolongation of the successful DOBRE project executed in 1999-2001). The main objectives of DOBRE-2 were to elucidate the deep-seated structure of the lithosphere and geodynamic setting of the shelf zones of the Azov and Black seas and the Crimean peninsula and to study the deep controls on the structure of basement and sedimentary cover. DOBRE-2 traverses a number of major faults and suture zones separating the EEC from the SP, the Crimean Mountains, and the Black Sea depression. Significant hydrocarbon reserves occur in the basins traversed by DOBRE-2. Deep seismic reflection profiling (30 second, Vibroseis) has been completed on a 100-km segment of the profile on the Azov massif (part of the Ukrainian Shield) as well as a 47-km segment in Crimea. These are complemented by refraction profiling on the shelf zones of the Azov ($\sim$53 km) and Black ($\sim$160 km) seas and coincident near-vertical (CDP) in the Black Sea, using a combination of onshore seismograph stations, ocean-bottom seismometers, onshore explosive energy sources (6 shot points), as well as ship-borne seismic acquisition. We present a 2-D seismic velocity model (Vp in the crust, depth to the Moho and depth to the intracrustal reflectors) along ($\sim$780 km) the DOBRE-2 & DOBRE'99 transect. Our model extends the model published for the DOBRE'99 profile (The DOBREfraction'99 Working Group, 2003) to the southwest. The Moho dips in this direction, from a depth of 40 km below the Azov Sea to $\sim$47 km, below Crimea. A short segment of a reflector interpreted to represent Moho was detected at a depth of $\sim$37 km in the Black Sea part of the profile. We also present a comparison of the DOBRE-2 velocity model with an interpretation of a coincident CDP profile.